

SILICON CARBIDE POWER METAL-OXIDE SEMICONDUCTOR FIELD
EFFECT TRANSISTORS HAVING A SHORTING CHANNEL AND METHODS
OF FABRICATING SILICON CARBIDE METAL-OXIDE SEMICONDUCTOR
FIELD EFFECT TRANSISTORS HAVING A SHORTING CHANNEL

Abstract of the Disclosure

Silicon carbide metal-oxide semiconductor field effect transistors (MOSFETs) and methods of fabricating silicon carbide MOSFETs are provided. The silicon carbide MOSFETs have an n-type silicon carbide drift layer, spaced apart p-type silicon carbide regions in the n-type silicon carbide drift layer and having n-type silicon carbide regions therein, and a nitrided oxide layer. The MOSFETs also have n-type shorting channels extending from respective ones of the n-type silicon carbide regions through the p-type silicon carbide regions to the n-type silicon carbide drift layer. In further embodiments, silicon carbide MOSFETs and methods of fabricating silicon carbide MOSFETs are provided that include a region that is configured to self-deplete the source region, between the n-type silicon carbide regions and the drift layer, adjacent the oxide layer, upon application of a zero gate bias.